

REMARKS

The Office Action dated October 22, 2008 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1, 17, 39 and 40 have been amended to more particularly point out and distinctly claim the subject matter of the invention. No new matter has been added and no new issues are raised which require further consideration or search. Claims 1-17, 19-21, 39 and 40 are respectfully submitted for reconsideration.

The Office Action rejected claim 40 under 35 U.S.C. §101 for allegedly being directed to non-statutory subject matter. The assertions were that the subject matter of claim 40 could be a carrier wave or communication medium that is not considered statutory subject matter under §101. Applicants respectfully traverse this rejection.

Claim 40 has been amended to recite “encoding via at least one stage of a **transceiver**, said encoding being performed to encode a frame...” A transceiver is considered statutory subject matter under §101 by those having ordinary skill in the art and by virtue of the design a transceiver device which would include various components necessary to handle the receiving and transmitting of communication signaling.

Referring to FIG. 1 of the present application, a typical cellular telecommunication network 100 is illustrated, which comprises various network elements including a mobile station (MS) 101, a base transceiver station (BTS) 102 and a transcoder (TC) 103. Each

of these three elements of the network includes a “transceiver” as recited in claim 40. The inclusion of a transceiver is apparent by the handling, processing and exchanging of signals performed between the MS, BTS and the TC.

Furthermore, a computer program is considered statutory subject matter under 35 U.S.C. §101 if it is properly defined as being encoded on a computer readable medium. Support for the definition of a computer readable medium is provided by *In re Lowry*, 32 F.3d 1579, 1583-1854, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994), which states:

“When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized” (see §2106.01 of the MPEP).

Therefore, Applicants submit that claim 40 is in compliance with the requirements of 35 U.S.C. §101. Withdrawal of the rejection is kindly requested.

Claims 17 and 19-21 were rejected under 35 U.S.C. §112, first paragraph for allegedly failing to be supported by the specification as filed. This rejection is respectfully traversed.

With regard to claim 17, the Office Action alleged that “a processor” is new matter and is not supported by the specification. Applicants disagree and submit that the specification discloses numerous examples of “processing” data performed by modules which, although, are not explicitly named “processor” may still be regarded as processors to one having ordinary skill in the art. For instance, page 17, lines 10-17 of the original

specification discloses that “selection of the codec mode compared to previously known methods such as those illustrated in FIGS. 2 and 3 above and the total processing required may also be reduced.” As may be observed from this first example, the present disclosure at least considers the importance of reducing the amount of processing power used to encode a speech signal.

In another example of the present disclosure, it is disclosed that “The speech signal received by the speech encoder is processed by the LPC calculation module, LTP calculation module and fixed code book excitation module on a frame by frame basis” (see the top of page 18 of the present application). In this example, three (3) modules are disclosed as being fully operational to perform processing on the speech signal. One of ordinary skill in the art can readily discern that any of these “modules” are capable of being a processor or at least part of a processor that is used to perform other processing operations. Therefore, claim 17, and 19-21, are in compliance with 35 U.S.C. §112, first paragraph.

As for claim 40, Applicants submit that a “computer readable medium” is supported by the specification as filed. As note above, *In re Lowry* discloses that “When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized” (see §2106.01 of the MPEP). Therefore, according to *Lowry*, if a memory is used to store data which is then retrieved for processing, the combination of the contents

of the memory and the processing performed via a processor constitute a computer readable medium.

Referring to page 26, line 10 of the specification, it is disclosed that “It should be appreciated that whilst the parameters from the VAD algorithm module are illustrated as being provided to the SBRA algorithm module via connection 707 in FIG. 7, this provision may be done by directly transmitting the parameters between the modules or by storing the parameters in suitably configured medium such as in a memory or a buffer, which can be accessed by both the VAD algorithm module and the SBRA algorithm module. As may be observed from the above-noted portion of the specification, information is stored in memory, retrieved from memory and processed via processing modules. Therefore, claim 40, are in compliance with 35 U.S.C. §112, first paragraph. Withdrawal of this rejection is kindly requested.

Claims 1-6, 12, 16-17, 19-21, and 39 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Publication No. 2001/0023395 (Su). According to the Office Action, Su disclosed every claimed recitation of these claims. However, as will be discussed below, Su does not disclose every recited element of any of the pending claims. Thus, this rejection is respectfully traversed and reconsideration is requested.

Claim 1, upon which claims 2-16 are dependent, recites a method that includes encoding via at least one stage of a transceiver. The encoding is performed to encode a frame using at least one of a plurality of codec modes. The encoded frame formed by at least one of the codec modes includes a plurality of parameters. The at least one stage

includes first, calculating values for the plurality of parameters of the encoded frame. Second, selecting one group of codec modes from a plurality of groups of codec modes using the calculated values of said parameters. Each of the groups of codec modes includes at least one speech processing algorithm and a common parameter characteristic. The selection is performed according to at least one of prior to calculating a linear prediction coding operation, after calculating a linear prediction coding operation and prior to calculating a long term prediction operation, and after calculating a linear prediction coding operation and a long term prediction operation. The method also includes, thirdly, encoding the frame with at least one of the speech processing algorithms from the selected group of codec modes in dependence on the common parameter characteristic.

Claim 17, upon which claims 19-21 are dependent, recites an apparatus that includes a processor configured to calculate values for a plurality of parameters of a frame. The frame is configured to be encoded using at least one of a plurality of codec modes. The encoded frame formed by at least one of the codec modes includes the plurality of parameters. The apparatus also includes selecting circuitry configured to select, after said calculation of the frame parameters, one group of code modes from a plurality of groups of codec modes based on said calculated values of said parameters. Each of the groups of codec modes includes at least one speech processing algorithm and a common parameter characteristic. The selection is performed according to at least one

of prior to calculating a linear prediction coding operation, after calculating a linear prediction coding operation and prior to calculating a long term prediction operation, and after calculating a linear prediction coding operation and a long term prediction operation. The apparatus also includes an encoder configured to encode, after the selecting of the group of codec modes, the frame with at least one of the speech processing algorithms from the selected group of codec modes in dependence on the common parameter characteristic.

Claim 39 recites an apparatus that includes processing means for calculating values for a plurality of parameters of a frame. The frame is configured to be encoded using at least one of a plurality of codec modes. The encoded frame formed by at least one of the codec modes includes the plurality of parameters, which include one or more of a voice activity detection flag, a long term prediction filtering flag parameter, an immitance spectral pair parameter, a pitch delay parameter, an algebraic codebook parameter, a gain parameter and a high-band energy parameter. The apparatus also includes selecting means for selecting from a plurality of groups of codec modes one group of codec modes based on the calculated values of the parameters. Each of the groups of codec modes includes at least one speech processing algorithm and a common parameter characteristic. The selecting is performed according to at least one of prior to calculating a linear prediction coding operation, after calculating a linear prediction coding operation and prior to calculating a long term prediction operation, and after calculating a linear prediction coding operation and a long term prediction operation.

The apparatus also includes encoding means for receiving information identifying said selected group of codec modes and encoding the frame with at least one of the speech processing algorithms from the selected group of codec modes in dependence on said common parameter characteristic.

Claim 40 is a computer program variation of claim 1, and, thus, the subject matter of claim 40 have already been addressed.

As will be discussed below, Su fails to disclose or suggest all of the elements of any of the presently pending claims.

Su discloses a process and device for selecting between several different codec modes for encoding and transmitting human speech. In particular, Su discloses, for example, in FIG. 2 that a codec mode may be selected by examining the raw speech data. For example, it is understood that when speech volume is low, then sampling rate may be reduced to preserve bandwidth.

Alternatively, Su at FIGS. 8-10 and the related text at paragraphs [0558]-[0562], as cited in the Office Action, discloses examining available bandwidth (or other transmission channel characteristics) and then selecting one of the codec modes depending on the determined transmission channel characteristics. In this way, the selection of the codec may be configured to maximize available transmission channel resources, even if the selected codec mode is non-optimal for the raw speech data. FIG. 9 and the related text further disclose, for example, that the speech data may be processed after encoding, but before transmission to further refine the encoded frames.

The recited embodiment of the present application are directed to a different technical challenge of first calculating characteristics of the encoded speech frame and then using these characteristics to select an appropriate codec mode to maximize transmission quality within the available transmission channel's available resources. For example, the present application describes how known algorithms determine a speech class before the encoding begins, such as implemented in Su. As further described in the present application, there are significant benefits to delaying the selection of a speech codec mode, including the more accurate and appropriate selection of a codec mode.

Referring to pages 19 and 20 of the specification, an example embodiment is disclosed that explains the operations involved with selecting a codec. In a first example, a group of codec modes is selected prior to calculating a linear prediction coding operation (LPC). In the other examples, the group of codec modes are selected after the LPC is calculated but before a long term prediction coding operation (LTP). Each of the independent claims have been amended to include these feature of the selection process.

Applicants respectfully submit that Su does not disclose "selecting one group of codec modes from a plurality of groups of codec modes...wherein the selection is performed according to at least one of prior to calculating a linear prediction coding operation, after calculating a linear prediction coding operation and prior to calculating a long term prediction operation, and after calculating a linear prediction coding operation and a long term prediction operation", as recited, in part, in independent claim 1 and similarly in independent claims 17, 39 and 40.

Applicants submit that Su discloses defining a desired characteristic for the encoded frame (i.e., depending on the transmission channel characteristics such as a bit rate) and selecting a codec mode to achieve this desired characteristic of the encoded frame (See FIGS. 8-10 of Su). Applicants urge that this disclosure does not teach or obviate the recitations of claim 1.

Su does not disclose or suggest the recitations of independent claims 1, 17, 39 and 40. Therefore, Applicants urge that claims 1, 17, 39 and 40 are currently in condition for allowance and all grounds for rejection have been overcome. Likewise, claims 2-16 depend from claim 1 and should be allowed on similar grounds. Withdrawal of this rejection of claims 1-6, 12, 16, 17, 19-21 and 39 is respectfully requested.

Claims 7-9, 11 and 13-15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Su in view of U.S. Patent No. 6,226,607 (Chang). Similarly, Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Su in view of Chang, and further in view of allegedly well-known prior art. According to the Office Action, Su does not disclose a selection of a group of codec modes in dependence of parameters determined from the encoding of the frame but this feature is disclosed in Chang. However, as explained below, Chang does not disclose this recited feature and, therefore, does not make up for the deficiencies in Su. Thus, the rejection is respectfully traversed and reconsideration is requested.

As argued above, claim 1 is allowable. Similarly, claims 7-9, 11 and 13-15 should be allowable as depending from allowable claim 1. Because the combination of Su and

Chang must teach, individually or in combination, all the recitations of the base claim and any intervening claims of dependent claims 7-9, 11 and 13-15, the arguments presented above supporting the patentability of independent claims 1 over Su are incorporated herein. The Action expressly conceded that Su does not teach or suggest the limitations of claims 7-9, 11 and 13-15, and for at least the reasons provided below, Chang does not make up for the deficiencies in Su.

In particular, the cited section of Chang at FIG. 4 and column 5 discloses a conventional method in which the raw speech data is evaluated to determine the energy level of that speech data. In particular, Applicants note in FIG. 4 that the energy detection in step 302 occurs prior to the encoding in steps 306, 310, 314, or 316. Thus, the supposed codec mode of selecting a bit rate may depend on the raw speech data, and not a processing of the speech data to calculate parameters of the encoded frame.

Thus, Chang does not teach or suggest calculating characteristics of an encoding frame, prior to encoding the frame, and using these calculated characteristics to select between different groups of codec modes. For these and other reasons, the combination of Su and Chang does not teach or suggest the recitation of claims 7-9, 11 and 13-15, and the rejection of these claims is traversed. Withdrawal of this rejection of claims 7-9, 11 and 13-15 and reconsideration of these claims in view of the preceding arguments are respectfully requested on this basis.


As discussed above, each of claims 1-17, 19-21, 39 and 40 recite subject matter which is neither disclosed nor suggested in the cited prior art. Applicants submit that the

recited subject matter is more than sufficient to render the invention non-obvious to a person of ordinary skill in the art. It is respectfully requested that independent claims 1, 17, 39 and 40 and the related dependent claims be allowed in view of the above arguments, comments and remarks.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicant's undersigned representative at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicant respectfully petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,



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